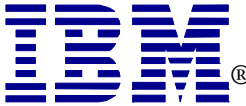
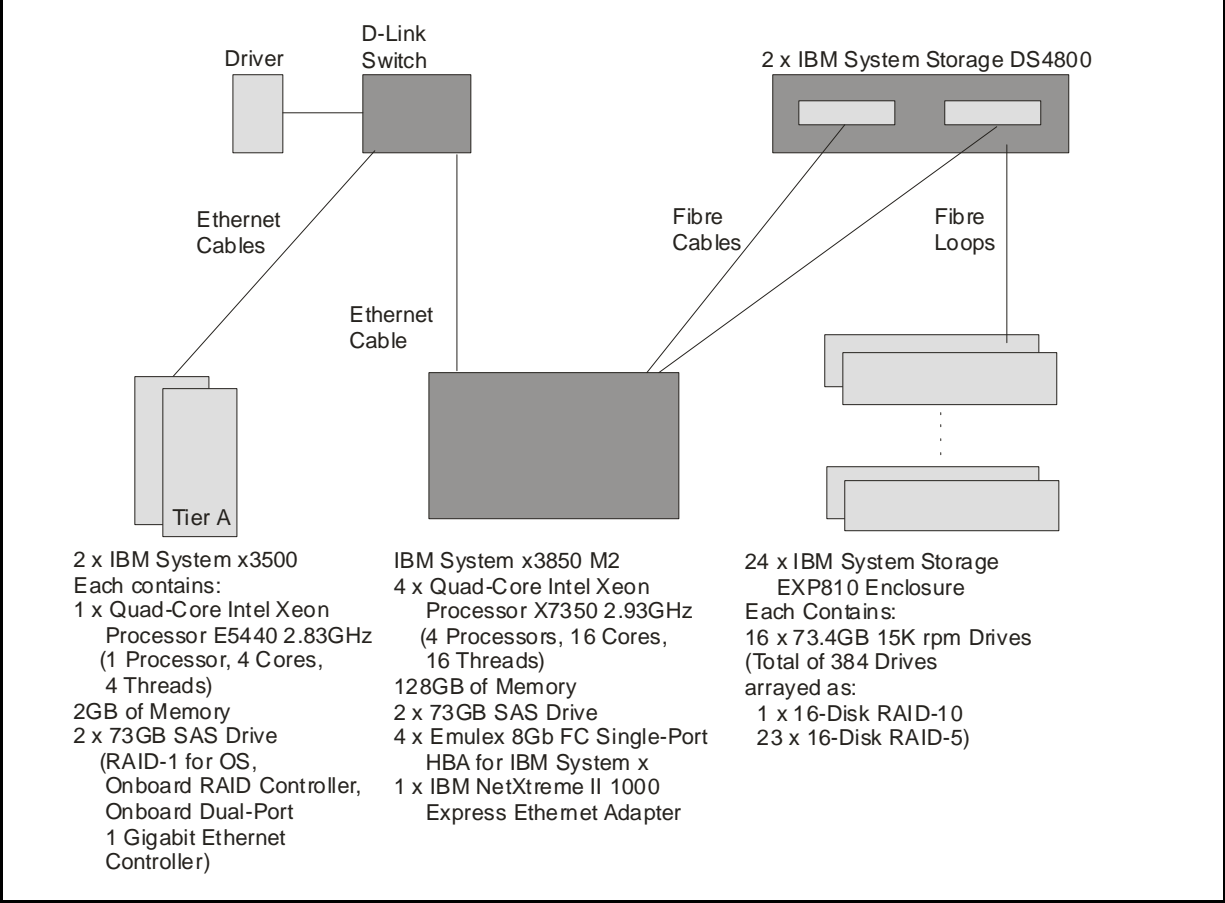


| | | | |
|---|---|---|--|
|  | IBM[®] System x[™] 3850 M2 Microsoft[®] SQL Server 2008 | | TPC-E Revision 1.4.0 TPC Pricing 1.3.0 |
| | | | Report Date: February 27, 2008 |
| TPC-E Throughput 479.51 tpsE | Price/Performance \$ 1,591.20 USD per tpsE | Availability Date August 30, 2008 | Total System Cost \$ 762,992 USD |

Database Server Configuration

| | | | |
|--|--|---|-------------------------------|
| Operating System Microsoft Windows Server 2008 Enterprise x64 Edition | Database Manager Microsoft SQL Server 2008 Enterprise x64 Edition | Processors/Cores/Threads 4/16/16 | Memory 128GB |
|--|--|---|-------------------------------|

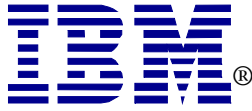


2 x IBM System x3500
Each contains:
1 x Quad-Core Intel Xeon Processor E5440 2.83GHz (1 Processor, 4 Cores, 4 Threads)
2GB of Memory
2 x 73GB SAS Drive (RAID-1 for OS, Onboard RAID Controller, Onboard Dual-Port 1 Gigabit Ethernet Controller)

IBM System x3850 M2
4 x Quad-Core Intel Xeon Processor X7350 2.93GHz (4 Processors, 16 Cores, 16 Threads)
128GB of Memory
2 x 73GB SAS Drive
4 x Emulex 8Gb FC Single-Port HBA for IBM System x
1 x IBM NetXtreme II 1000 Express Ethernet Adapter

24 x IBM System Storage EXP810 Enclosure
Each Contains:
16 x 73.4GB 15K rpm Drives (Total of 384 Drives arrayed as:
1 x 16-Disk RAID-10
23 x 16-Disk RAID-5)

| | | |
|--|--|--|
| Initial Database Size 1,913.10 GB | Redundancy Level: 1 RAID-10 Log + RAID-5 Data | Storage 384 x 73.4 GB 15K |
|--|--|--|



IBM System x3850 M2 Microsoft SQL Server 2008

TPC-E Revision 1.4.0
TPC Pricing Spec 1.3.0

Report Date:
February 27, 2008

Availability Date:
August 30, 2008

| Description | Part Number | Price Source | Unit Price | Quantity | Extended Price | 3-Yr. Maint. Price |
|--|---------------|--------------|------------|----------|----------------|--------------------|
| Server Hardware | | | | | | |
| IBM System x3850 M2 (2 x Intel Xeon Processor X7350 (2.93GHz/2x4MB L2 Cache) with 4 Memory Cards and 8 x 1GB DIMM) | 7141-4RU | 1b | 17,499 | 1 | 17,499 | |
| Intel Xeon Processor X7350 (2.93GHz/2x4MB L2) | 44E4243 | 1b | 3,579 | 2 | 7,158 | |
| 8GB (2x4GB) PC2-5300 CL5 ECC DDR2 SDRAM | 41Y2768 | 1b | 1,699 | 16 | 27,184 | |
| 73GB 15K 2.5" Hot-Swap SAS SFF | 43X0837 | 1b | 519 | 2 | 1,038 | |
| IBM 8Gb FC Single-Port PCIe HBA for IBM System x | 42D0485 | 1a* | 1,469 | 4 | 5,876 | |
| NetXtreme II 1000 Express Ethernet Adapter | 39Y6066 | 1b | 279 | 1 | 279 | |
| IBM T115 15-inch TFT Display | 494215U | 1a | 209 | 1 | 209 | |
| IBM Preferred Pro USB Keyboard | 40K9584 | 1b | 29 | 1 | 29 | |
| IBM 3-Button Optical Mouse - Black - USB | 40K9201 | 1b | 19 | 1 | 19 | |
| ServicePac for 3-Year 24x7x4 Support (x3850 M2) | 96P2688 | 1b | 3,390 | 1 | | 3,390 |
| ServicePac for 3-Year 24x7x4 Support (Display) | 10N3110 | 1b | 90 | 1 | | 90 |
| Subtotal | | | | | 59,291 | 3,480 |
| Server Storage | | | | | | |
| 4 Gbps SW SFP Transceiver 4 Pack | 22R4897 | 1b | 550 | 9 | 4,950 | |
| IBM 1m LC-LC Fibre Channel Cable | 39M5696 | 1b | 79 | 40 | 3,160 | |
| IBM 5m LC-LC Fibre Channel Cable | 39M5697 | 1b | 129 | 12 | 1,548 | |
| IBM S2 42U Standard Rack | 93074RX | 1b | 1,489 | 3 | 4,467 | |
| PowerCom KingPro UPS (2 spares) | KIN-1500AP | 4 | 135 | 15 | 2,025 | |
| ServicePac for 3-Year 24x7x4 Support (Rack) | 41L2760 | 1b | 300 | 3 | | 900 |
| IBM System Storage DS4800 Disk Upgrade to 8GB Cache | 1815-82A | 2 | 53,995 | 2 | 107,990 | |
| IBM System Storage DS4000 EXP810 Storage Exp. Unit | 1812-81A | 2 | 6,000 | 24 | 144,000 | |
| 73.4GB 15K 4Gbps FC E-DDM Hot-Swap HDD | 40K6816 | 2S | 1,301 | 384 | 499,584 | |
| ServicePac for 3-Year 24x7x4 Support (EXP810) | 10N3651 | 2 | 960 | 24 | | 23,040 |
| ServicePac for 3-Year 24x7x4 Support (DS4800) | 41C5953 | 2 | 3,200 | 2 | | 6,400 |
| Subtotal | | | | | 767,724 | 30,340 |
| Server Software | | | | | | |
| Microsoft SQL Server 2008 Enterprise x64 Edition | N/A | 3a | 24,999 | 4 | 99,996 | |
| Microsoft Windows Server 2008 Enterprise x64 Edition | P72-03168 | 3a | 3,999 | 1 | 3,999 | |
| Microsoft Problem Resolution Services | N/A | 3b | 245 | 1 | | 245 |
| Subtotal | | | | | 103,995 | 245 |
| Client Hardware | | | | | | |
| x3500 with Intel Xeon E5440 (2.83GHz/12MB), 1GB Memory | 7977M2U | 1b | 3,109 | 2 | 6,218 | |
| 2GB (2x1GB) PC2-5300 CL5 ECC DDR2 Chipkill FB-DIMM 667MHz | 39M5785 | 1b | 259 | 2 | 518 | |
| 73GB 15K 3.5" Hot-Swap SAS | 43W7523 | 1b | 329 | 4 | 1,316 | |
| ServicePac for 3-Year 24x7x4 Support (x3500) | 21P2084 | 1b | 689 | 2 | | 1,378 |
| Subtotal | | | | | 8,052 | 1,378 |
| Client Software | | | | | | |
| Microsoft Windows Server 2003 R2 Standard x86 Edition | P73-01972 | 3a | 999 | 2 | 1,998 | |
| Subtotal | | | | | 1,998 | 0 |
| Infrastructure | | | | | | |
| D-Link DGS-2208 10/20/100/1000/2000Mbps Switch (2 spares) | DGS-2208 | 4 | 55 | 4 | 220 | |
| Ethernet Cable (2 spares) | A3L791-10-BLK | 4 | 5 | 11 | 55 | |
| Subtotal | | | | | 275 | |
| Total | | | | | 941,335 | 35,443 |
| IBM Large Purchase Discount (See Note 2.) | 32.32% | 1b | | | -26,222 | |
| Compsat Technology Large Purchase Discount (See Note 3.) | 22.92% | 2 | | | -179,047 | |
| Microsoft Open Program Discount Schedule | 8.04% | 3a | | | -8,517 | |

Pricing: 1 - IBM - 1-888-SHOP-IBM, ext. 5821; 2 - Compsat Technology
3 - Microsoft; 4 - newegg.com

* This component is not immediately orderable. See the FDR for more information.

Note 1: "S" mean that one or more components of the measured configuration have been substituted in the Priced Configuration. See the FDR for details.

Note 2: Discount based on IBM Direct guidance applies to all line items where Pricing=1b.

Pricing is for this system or one of similar size.

Note 3: Discount applies to all line items where Pricing=2; pricing is for these or similar quantities.

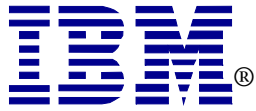
Implementation and results audited by Doug Johnson for InfoSizing, Inc. (www.sizing.com)

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing section of the TPC benchmark specifications. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

Three-Year Cost of Ownership USD: \$762,992

TPC-E Throughput: 479.51

\$ USD/tpsE: \$1,591.20



**IBM System x3850 M2
Microsoft SQL Server 2008**

TPC-E Revision 1.4.0
TPC Pricing Spec 1.3.0

Report Date:
February 27, 2008

Availability Date:
August 30, 2008

| Reported Throughput: 479.51 tpsE | | Configured Customers: 245,000 | | |
|--|---------|-------------------------------|-----------------------------|---------|
| Response Time (in seconds) | Minimum | Average | 90 th Percentile | Maximum |
| Broker-Volume | 0.00 | 0.04 | 0.07 | 0.52 |
| Customer-Position | 0.00 | 0.03 | 0.05 | 1.52 |
| Market-Feed | 0.00 | 0.03 | 0.07 | 0.97 |
| Market-Watch | 0.00 | 0.03 | 0.06 | 1.72 |
| Security-Detail | 0.00 | 0.02 | 0.03 | 0.94 |
| Trade-Lookup | 0.00 | 0.48 | 0.66 | 1.34 |
| Trade-Order | 0.00 | 0.08 | 0.14 | 1.61 |
| Trade-Result | 0.00 | 0.08 | 0.13 | 1.52 |
| Trade-Status | 0.00 | 0.02 | 0.04 | 1.54 |
| Trade-Update | 0.01 | 0.57 | 0.71 | 1.37 |
| Data-Maintenance | 0.00 | 0.13 | N/A | 1.94 |
| Transaction Mix | | Transaction Count | Mix % | |
| Broker-Volume | | 1,691,592 | 4.900 | |
| Customer-Position | | 4,487,901 | 13.000 | |
| Market-Feed | | 345,256 | 1.000 | |
| Market-Watch | | 6,213,621 | 17.999 | |
| Security-Detail | | 4,832,892 | 14.000 | |
| Trade-Lookup | | 2,761,525 | 8.000 | |
| Trade-Order | | 3,486,545 | 10.100 | |
| Trade-Result | | 3,452,528 | 10.001 | |
| Trade-Status | | 6,558,843 | 19.000 | |
| Trade-Update | | 690,335 | 2.000 | |
| Data-Maintenance | | 124 | N/A | |
| Test Duration and Timings | | | | |
| Ramp-up Time | | | 00:39:00 | |
| Measurement Interval | | | 02:00:00 | |
| Business Recovery Time | | | 01:36:09 | |
| Total Number of Transactions Completed in Measurement Interval | | | 34,521,038 | |